REMARKS

The Examiner is thanked for the due consideration given the application. This amendment is being filed concurrent with a Request for Continued Examination.

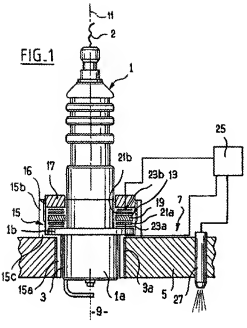
Claims 8-14 and 17-20 are pending in the application. The claims have been amended to improve their language and to better set forth the invention being claimed.

No new matter is believed to be added to the application by this amendment.

Rejection Under 35 USC §112, Second Paragraph

Claims 8-14 and 17-19 have been rejected under 35 USC §112, second paragraph as being indefinite. This rejection is respectfully traversed.

The claims have been amended to better set forth the present invention, which is exemplarily shown in Figures 1 and 2 of the application, which are reproduced below.



The present invention includes a collar (15) that is a single piece unit that may have three different parts (15a, 15b and 15c). This is explained at page 6 of the specification:

> *In order to attach the plug with respect to the cylinder head 5 and pressurize the sensor 13, a collar 15 and a nut 17 have been provided.*
>
> *The collar is in the form of a hollow cylindrical component having a threaded first part 15a engaged in the tapping 3a of the orifice 3 and a second part 15b of larger diameter located outside the orifice, axially at the opposite end to the combustion chamber. The parts 15a and 15b are connected by a shoulder 15c that rests against the cylinder head 5.*
>
> *The second part 15b thus defines an interior volume designed to accommodate a shoulder 1b of the plug and*

the sensor 13, which is in annular shape, locally surrounding an exterior surface of the plug.

The nut (or threaded ring) 17 is screwed into a tapping 16 of the second part 15b.

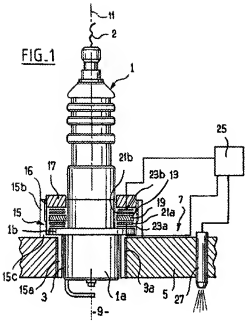
The claims have accordingly been amended to reflect this disclosure in a fashion that is clear, definite and has full antecedent basis.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Rejection Over BARTLEY

Claims 8-14 and 17-19 remain rejected under 35 USC §103(a) as being unpatentable over BARTLEY (U.S. Patent 5,823,802). This rejection is respectfully traversed.

The present invention pertains to measuring pressure in an internal combustion engine that is illustrated, by way of example, in Figures 1 and 2 of the application, which are reproduced (again) below.



Figures 1 and 2 show a functional member 1, 1' such as a spark plug or fuel injector. A pressure sensor device 19 is interposed between a fixed member portion and a confronting portion.

In the present invention the functional member (e.g., spark plug) is not screwed into the cylinder head. Attachment is via a collar 15 having an outside portion 15b. The collar 15 is screwed into the cylinder head. A nut 17 secures the collar such that the functional member and the pressure sensor device can be placed into the configuration without being screwed in. This freedom of the functional member permits it to press against the pressure sensing device so as to register as pressure. This functionality is discussed at page 7, lines 10-24 of the specification:

> More specifically, during internal combustion, the pressure in the combustion chamber 9 increases and the spark plug 1 is subjected to this. As the plug is not screwed into the orifice 3, this pressure has a tendency to displace it more or less along the axis 11, towards the outside of the chamber 9, correspondingly compressing the sensor 13 between the shoulder 1b and the nut 17. The change in pressure exerted on the piezoelectric element 19 generates a potential difference between the contact rings 21a, 21b. This information is processed by the computer 25 which determines the injection conditions, particularly with reference to an operating model saved in memory, which may make it possible to take account of the state of the engine, whatever its operating history.

These aspects of the present invention are reflected in independent claims 8, 19 and 20.

BARTLEY pertains to an electrical connector for an electrical device.

BARTLEY deals with a combustion pressure sensor attached to a cylinder head and which can work alone (the cylinder head deformation is measured). In contrast, the present invention deals with a combustion pressure sensor that needs a “plug” (Fuel injector, glow plug, spark plug, etc.) in order to pressure the combustion pressure.

The Official Action refers to Figure 1 of BARTLEY, which is reproduced below.

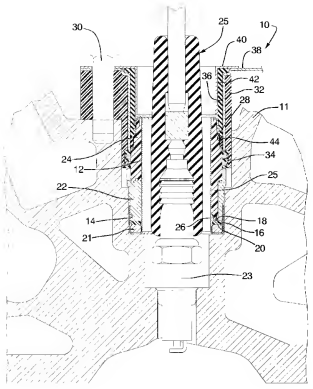


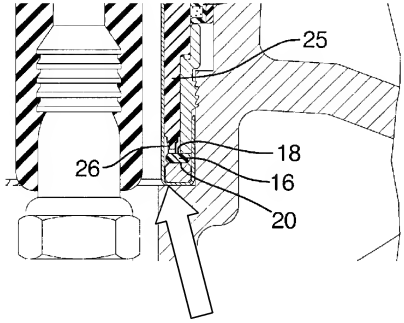
FIG. 1

Figure 1 of BARTLEY shows a pressure sensor 10 that includes a sensing element 16. As can be seen, the sensing element 16 is separate from the spark plug, and column 2, lines 38-42 of BARTLEY states: *"Bonnet 24 has a finger 25 that is disposed in an internal slot in the annular mounting shell 22 and that terminates in a nipple at the lower end. A short metal tube 26 pressed onto the nipple contacts the electrical contact 18 on an upper surface of sensing element 16."*

At pages 3 and 4, the Official Action acknowledges: *"Further, it is noted that Bartley does not specifically state that the pressure sensitive means senses the pressure generated*

by the displacement of the spark plug and the actual description of the pressure being sensed is apparently omitted in the description."

However, the drawing figures of BARTLEY clearly show that there is no link between the sparkplug and the sensing element and that there is no link between any sparkplug displacement and the sensing device.



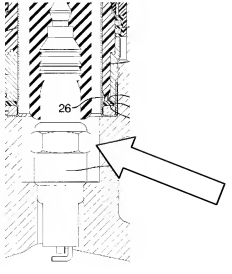
Sleeve (12) - see Figure 2 - separates sensor (16) from spark plug.

It is clear that one can install and remove the sparkplug without any problems and without affecting the sensing device (see column 4, lines 44–53). It should be noted that the Official Action has mentioned this part of the text, but does not fully appreciate the meaning thereof.

To clarify the point, it is respectfully noted that the issue can be stated as: *If the sensing element is not linked with the spark plug, how to measure the cylinder pressure?*

A cylinder pressure sensor 10 is mentioned in column 2, lines 1–3 of BARTLEY. However, this sensor of BARTLEY apparently senses the cylinder head deformation (due to the cylinder pressure variation). This is another (completely different) way of measuring the cylinder pressure and has nothing to do with any sparkplug displacement (see the related art of U.S. Patent 4,969,352 mentioned in U.S. Patent 5,329,809 in order to understand how such sensing element works).

It is therefore clear that the sparkplug is screwed in the cylinder head in BARTLEY and thus this document has nothing to do with the present invention. This is clear from Figure 1 of BARTLEY, in which a hexagonal nut (to accommodate a wrench to screw in the spark plug 23) is built into the spark plug body.



BARTLEY thus teaches an electrical connector dedicated to a sparkplug that is surrounded by a cylinder head deformation sensor. Indeed, such a sensor requires some room in the sparkplug well in order to be installed, and then the electrical connector has to be different from the standard one (see the BACKGROUND OF THE INVENTION and U.S. Patent 5,329,809 in order to realize that need).

In the Response to Arguments the Office Action asserts that cylinder pressure variation would cause some degree of displacement on the spark plug as the plug expands in the cylinder causing the pressure variation. However, since the spark plug is screwed into the cylinder head, any displacement would be negligible in BARTLEY.

However any negligible displacement in Bartley would not be measured because the spark plug is separated from the sensor by the sleeve (12). BARTLEY would thus be incapable of *"displacement of the spark plug, fuel injector or glow plug generates pressure to be detected by the pressure sensitive means,"* such as is set forth in the present invention.

As a result, one of ordinary skill and creativity would fail to produce a claimed embodiment of the present invention from a knowledge of BARTLEY. A *prima facie* case of unpatentability has thus not been made.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Conclusion

The rejections are believed to have been overcome, obviated or rendered moot, and that no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

/Robert E. Goozner/

Robert E. Goozner, Reg. No. 42,593
Customer No. 00466
209 Madison Street
Suite 500
Alexandria, VA 22314
Telephone (703) 521-2297
Telefax (703) 685-0573

REG/fb